

# 2019 IEEE Singapore Section Report

## PART A - SECTION SUMMARY

### A.1 EXECUTIVE SUMMARY

POSITION	NAME
Chairman	Ong Ling Chuen, Michael
Vice Chair (Awards & Recognition Chair)	Muhammad Faeyz Karim
Secretary (eBroadcast Chair)	Ma Maode
Treasurer (Conference Chair)	Sahoo Sanjib Kumar
Immediate Past Chairman (Awards & Recognition Chair)	Arokiaswami Alphones
Committee Member - Membership Chair	Stefan Winkler
Committee Member - Membership Co-Chair	Ravinder Pal Singh
Committee Member - Student Activities Chair	Goh Wang Ling
Committee Member - Student Activities Co-Chair	Hla Nu Phyu
Committee Member - Professional Activities Chair	Kush Agarwal
Committee Member - Professional Activities Co-Chair	Nicholas Wong
Committee Member - Educational Activities Chair	Luo Sha

2019 is another wonderful year for the IEEE Singapore Section. Altogether, the Singapore Chapters and Section have organized 327 events, out of which 225 are technical, 53 non-technical and 49 administrative, as of 1 December 2019.

Growing the membership base remains a challenge and our goal would be to strive for a sustainable increase in members. We hope these new members will be engaged in various IEEE activities and would appreciate the value of professional networking.

#### 1. ELEVATED FELLOWS – 2019

##### **Dipti Srinivasan**

*for contributions to computational intelligence for smart grid*

##### **Mo Li**

*for development of wireless and networked sensing systems*

##### **Xiaowu Zhang**

*for contributions to three-dimensional integrated circuits*

##### **Xudong Chen**

*for contributions to optimization methods for electromagnetic inverse scattering*

##### **Yonggang Wen**

*for contributions to cloud systems for multimedia signal processing and communications*

##### **Yonghong Zeng**

*for contributions to spectrum sensing and medium access control*

## **2. R10 ExCOM MEETING IN SINGAPORE**

The Region 10 ExCom Meeting was held in Singapore on 12 January 2019. In attendance:

- Akinori Nishihara – R10 Director
- Deepak Mathur – R10 Director Elect
- Kukjin Chun – R10 Past Director
- Toshio Fukuda – IEEE President Elect

Areas of Focus:

- Continue to establish IEEE Geo Units
- Leverage activities of our geographical units
- Upturn member retention rates (including students)
- Strengthen the quality of our conference content and organization
- Industry relations
- Entrepreneurship

Strategy:

- R10 Role: provide guidelines for Sections to move forward
- Region 10 will support plans to solve R10 issues
- Encourage multi-geo units or -affinity groups or -R10 Committee activities
- Support for new subsections representing country
- Use teleconferences for training and meetings
- Use TENSYP, TENCON, R10 HTC, or other International- or National-level conferences for the promotion and training of IEEE

Section supported by providing the transportation from the Hilton Hotel to Villa@Botanic Gardens.

## **3. MEMBERSHIP RENEWAL FOR NOMINATED COMMITTEE MEMBERS**

Some nominated ExCo members of some Chapters need repeated reminders before they renew their membership for the year they are serving. For the 2020 Committee, all nominated ExCo members need to renew their 2020 membership before submitting their nomination forms. This will ensure that the Section office can update the IEEE vTools with the new committee at the beginning of the year and signatories of Chapter bank accounts can be updated promptly.

## **4. FINANCE**

Our consolidated financial position continues to remain healthy. The level of reserve is not excessive as the Section comprises 32 sub-entities (30 Chapters and 2 Affinity Groups), each recognized as a full-fledged IEEE Organizational Unit in terms of its privilege to organize events and manage its own finance.

The Section also helped to open 9 conference bank accounts for the conferences held in 2019 and 4 for the 2020 conferences, with the OCBC bank as at early December.

Our Treasurer Dr Sahoo Sanjib Kumar, together with the Section Accountant, Ms Joy Leong have worked tirelessly over the past year to maintain our accounts in an efficient manner.

## **5. STUDENT ACTIVITIES**

IEEE Singapore Section has 3 active Student Branches - NUS, NTU and SUTD and 2 IEEE-HKN Branches - NUS and SUTD. These Student Branches organize regular educational workshops and competitions for the IEEE Student Members and for reaching out to non-members. They serve as platforms for connecting IEEE Members and the Student Members. They are also effective channels for IEEE to reach out to young Engineering students in the local universities.

## 6. E-BROADCAST

Regular broadcasts containing information on seminars, talks, conferences, social events and membership benefits have been sent to IEEE members in Singapore. This was well coordinated by Prof Ma Maode.

## PART B - ORGANIZATIONAL ACTIVITIES

### B.1 MEMBERSHIP DEVELOPMENT PROGRAMS

Below are the tables for the past 3 years' membership:

<b>IEEE Grade Description</b>	<b>Active Members (as at 3 December 2019)</b>
Student Member	127
Graduate Student Member	352
Associate Member	32
Member	1,452
Senior Member	445
Fellow	51
Life Member	31
Life Senior	25
Life Fellow	7
Affiliate	1
<b>TOTAL</b>	<b>2,523</b>

<b>IEEE Grade Description</b>	<b>Active Members (as at 30 November 2018)</b>
Student Members	166
Graduate Student Members	401
Associate Members	25
Members	1598
Senior Members	436
Fellow	47
Life Members	24
Life Seniors	17
Life Fellow	6
<b>TOTAL</b>	<b>2720</b>

<b>IEEE Grade Description</b>	<b>Active Members (2017)</b>
Student Members	177
Graduate Student Members	416
Associate Members	24
Members	1595
Senior Members	421

Fellow	41
Life Members	20
Life Seniors	15
Life Fellow	4
<b>TOTAL</b>	<b>2713</b>

The membership development committee faces the challenge of retaining student members and reaching out to graduate students.

Organized a Membership Drive and Inspirational Talk “Turning Problems into Possibilities - Building Resilience in Life and Work” on 30 September 2019. Sponsored by PIAS.

The Night Safari corporate membership card cannot be renewed as the Wildlife Reserves Singapore’s new policy only allow for corporate cards to be used for staff benefit and not as membership benefit.

## B.2 Chapter Activities

The Singapore Section has 30 Chapters and 2 Affinity Groups. As at 1 December 2019, 327 activities have been reported via L31 vTools system. Activities taking place after 1 December 2019 were reported subsequently after completion of the activities.

L31 submission status based on IEEE vTools System as at 1 December 2019:

S N	Section / Chapters / Affinity Groups	OUs	Tech	Admin	Non- Tech	Total
1	Aerospace and Electronic Systems / Geoscience and Remote Sensing Joint Chapter	AES10/GRS29	1	2	3	6
2	Antennas & Propagation / Microwave Theory & Techniques Joint Chapter	AP03/MTT17	16	4	1	21
3	Broadcast Technology Chapter	BT02	0	0	0	0
4	Computer Chapter	C16	0	0	0	0
5	Circuits & Systems Chapter	CAS04	16	3	1	20
6	Consumer Electronics Chapter	CE08	1	0	0	1
7	Computational Intelligence Chapter	CIS11	3	1	0	4
8	Communications Chapter	COM19	7	2	0	9
9	Control Systems Chapter	CS23	3	1	0	4
10	Education Chapter	E25	2	0	1	3
11	Engineering in Medicine & Biology Chapter	EMB18	7	4	0	11
12	Electromagnetic Compatibility Chapter	EMC27	9	2	0	11
13	Industry Applications / Power Electronics Joint Chapter	IA34/PEL35	10	3	1	14
14	Industrial Electronics Chapter	IE13	9	1	2	12
15	Intelligent Transportation Systems	ITS038	0	0	0	0
16	Magnetics Chapter	MAG33	7	0	2	9
17	Nanotechnology Chapter	NAN042	0	0	0	0
18	Nuclear and Plasma Science Chapter	NPS05	0	0	0	0

10	Oceanic Engineering Chapter	OE22	5	4	1	10
20	Power & Energy Chapter	PE31	13	0	8	21
21	Photonics Chapter	PHO36	77	0	21	98
22	Reliability / Components, Packaging & Manufacturing Technology / Electron Devices Joint Chapter	R07/CPMT21/ED15	7	2	1	10
23	Robotics & Automation Chapter	RA24	7	1	1	9
24	Council on RFID	RFID741	6	3	0	9
25	Section	Section	4	4	3	11
26	Systems, Man & Cybernetics Chapter	SMC28	6	1	0	7
27	Signal Processing Chapter	SP01	0	0	0	0
28	Solid State Circuits Chapter	SSC37	2	3	2	7
29	Technology and Engineering Management Chapter	TM14	0	0	0	0
30	Vehicular Technology Chapter	VT06	5	0	0	5
31	Women in Engineering Affinity Group	WIE	2	4	1	7
32	Young Professionals	YP	1	0	7	8
	<b>Total</b>		<b>225</b>	<b>49</b>	<b>53</b>	<b>327</b>

### B.3 Professional and Continuing Education Activities

- 24 May 2019: IEEE Singapore Blockchain Group**  
 Successful launch of IEEE Singapore Blockchain Group with SGInnovate – through IEEE Blockchain Initiative.  
<https://www.sginnovate.com/events/ieee-singapore-blockchain-group-launch>
- 13 September 2019**  
 Launch of **IEEE Women in Engineering Night Series** (with YP & SGInnovate).  
 Kathy Land – IEEE President candidate as speaker.  
<https://www.sginnovate.com/events/women-engineering-networking-nights>
- 12 October 2019: IEEE Family Day**  
 The Young Professionals AG organized a bowling event at the Toa Payoh Safra.
- 17–20 October 2019: IEEE 2019 TENCON, Kerala, India**  
 R10 Industry Relations Committee Chair invited the sub-committee Chair as Honourable Speaker in the “Global and Local Entrepreneurs Experience Sharing Session” in the IEEE 2019 TENCON Special Industry Track.
- 13 November 2019:**  
**Singapore Week of Innovation and Technology (SWITCH) and Slingshot Competition 2019** <https://www.switchsg.org/>  
 IEEE is an official partner with NRF and Enterprise Singapore this year, and is helping source international speakers for deep-tech stages (1000 pax.).  
<https://entrepreneurship.ieee.org/session/2019-singapore-week-of-innovation-technology-switch/>

### B.4 Students Activities

IEEE Singapore Section has 3 active Student Branches - NUS, NTU and SUTD and 2 IEEE-HKN Branches – NUS and SUTD. These Student Branches organize regular educational workshops and competitions for the IEEE Student Members and for reaching out to non-

members. They serve as platforms for connecting IEEE Members and the Student Members. They are also effective channels for IEEE to reach out to young Engineering students in the local universities

## **B.5 Affinity Group Activities**

### **IEEE YOUNG PROFESSIONALS (YP) AFFINITY GROUP**

**Chairman: Ramaswami Palaniappan Arjun**

#### **(A) ACTIVITIES FOR THE YEAR 2019:**

##### **Administrative Meetings**

- 4 Committee meetings to discuss activities

##### **Technical Seminars and Talks**

- IEEE EMB Singapore Symposium 2019 – Collaborated with EMB chapter
- Internet of Things and Software of Things – Talk by Dr. Sandeep Kumar, Senior Vice President – Worldwide Operations, Silicon Labs in collaboration with NTU EEE GSC
- Machine Learning for Intelligent Transportation Systems – Talk by NTU Prof Justin Dauwels in collaboration with NTU EEE GSC
- Bio-Lasers – Talk by NTU Prof Yu-Cheng Chen, in collaboration with NTU EEE GSC
- Academia vs. Industry in the Era of Unstable Working Market – Talk by Prof Avi Mendelson, Technion - Israel Institute of Technology in collaboration with NTU EEE GSC
- Setting the Standards for Commercial Game Development – Panel discussion by Susan K. (Kathy) Land, FIEEE, Past Vice President of IEEE Technical Activities and Programme Manager, US Department of Defence in collaboration with IEEE, SGInnovate and Women in Engineering.
- Building the future of healthcare with additive manufacturing - Talk at Connexis South Tower - Jointly organized by IEEE YP SG, IEEE EMB SG
- IEEE Family Day 2019 - Jointly organized by YP SG and WIE SG together with various chapters
- Translating microwave technologies from classroom to commercialization - Jointly organized by YP and WIE at IEEE APMC 2019

#### **(B) FUTURE PLANS:**

- Career talks
- Industrial visits
- Graduates' Research Showcase 2020

#### **(C) SUMMARY:**

- Seminars-5x, Seminars – 2x, Conference – 1x, Social Event – 1x, Committee Meeting AY 2019 – 4x

### **IEEE WOMEN IN ENGINEERING (WIE) AFFINITY GROUP**

**Chairman: Aishwarya Bandla**

#### **(A) ACTIVITIES FOR THE YEAR 2019:**



The IEEE WiE Singapore group has actively contributed to a multitude of activities listed below (January 2019 to December 2019):

- Technical – 4
- Conferences – 3
- Administrative – 4
- Social – 3

### **Administrative Meetings**

WIE AdCom organized 4 administrative meetings for the year 2019.

- 1<sup>st</sup> Meeting on 18 January 2019: WiE members met at Singapore Polytechnic and discussed activities for the year 2019. Chairman conveyed appreciation to the previous AdCom office bearers of the year 2018 and new office bearers were appointed.
- 2<sup>nd</sup> Meeting on 11 April 2019: WIE members brainstormed for activities for upcoming quarter – technical and social.
- 3<sup>rd</sup> Meeting on 19 July 2019: Chairman gave updates of past activities and all members jointly discussed the details of upcoming Networking Nights event.
- 4<sup>th</sup> Meeting on 5 November 2019: WIE members discussed and nominated office bearers and members for the WIE executive committee of the year 2020. Events for the remainder of the year were planned and discussed to be executed smoothly. Strategic plan for 2020 was briefly discussed.

Apart from face to face meetings, executive members also communicate each other via WIE EXCO WhatsApp group to keep information up to date.

### **Technical Seminars and Talks**

WIE was actively involved/organized Technical Seminars and Inspirational talks to further promote women profile and network within Singapore and Region 10. WIE built collaborations with several organizations and communities in Singapore, broadening the horizons and knitting a strong community of diversity and inclusion in the tech and building a support system for women in STEM careers.

- **Singapore Healthcare Engineering Forum (29 March 2019)**

WiE co-organized the Singapore healthcare Engineering Forum along with the IEEE Engineering in Medicine and Biology Society, Biomedical engineering Society Singapore and IEEE Singapore Section. This symposium covered biomedical and health informatics, biomedical imaging and image processing, biomedical signal processing, cardiopulmonary systems, neuro-engineering, wearable biomedical sensors and systems. This was held on 29 Mar 2019 at the Aspiration Theatre @ Biopolis, Singapore. The event was attended by over 100 participants.

- **WiE SG Networking Nights – Launch (13 September 2019)**

WiE launched the Networking Nights – a series of gatherings with a diverse theme each time in collaboration with various organizations to bring wo(men) together in an effort to build a gender equal workforce. This series, was launched on the 13 September 2019 in collaboration with SGInnovate, IEEE Young Professionals Singapore and IEEE Singapore Section. In our first event at Blk 79 Bash, we featured Susan Kathy Land, FIEEE, Past Vice President of IEEE Technical Activities and Programme Manager, US Department of Defense. Kathy who speak about "Setting the standards for commercial game development" and shared stories from her journey in a STEM career to an audience of over 40 members.

- **NTUC UWEEI Female Engineers Mentoring (22 October 2019)**

NTUC UWEEI conducted an engagement with Female engineering students as part of the "UWEEI Female Engineering Mentoring session" with sharing by industry mentors on what could be the focus in the industry now, insight into an engineer's day to day job and Q&A including concerns by students when they enter workforce. The overall objective of this initiative was to sustain the interest of young women engineering students & retain them in the industry after their graduation. IEEE WiE senior members were invited as mentors to interact with the students at Republic Polytechnic in this event on the 22 October 2019.

- **WiE SG Networking Nights Nov edition (14 November 2019)**

Find a mentor and develop a continuous-learning mindset; Hire consciously - create a diverse team including individuals who think differently from you; Actively seek feedback from employees and customers; Identify and nurture future leaders in your organization - these were takeaways from the energetic and candid panel discussion at the 2<sup>nd</sup> IEEE Women in Engineering Networking Night. Four tech entrepreneur-leaders - Joydeep Sarkar, Jayantika Soni, PhD, Surbhi Krishna Singh and Kakanga Moses, PhD spoke with

Randi S. Sumner, CAE - IEEE Senior Director of Strategy & Entrepreneurship on "Acing Leadership Roles in Tech". A huge thanks to our co-organizers SGInnovate, Entrepreneur First & e2i, Employment & Employability Institute.

### **International Conferences**

WiE was actively involved in co-organizing several key conferences held in Singapore and even organized special sessions in few of them. These increased the visibility of WiE and helped raise awareness of women in STEM in various communities.

- **16<sup>th</sup> Gender Summit 2019 APAC (28-29 August 2019)**

WiE was actively involved in the 16<sup>th</sup> Gender Summit – Asia Pacific organized by the Singapore Women in Science, Portia, and AStar. The event was held in Matrix Theatrettes, Biopolis on 28 and 29 August 2019. The Gender Summit aims to enhance scientific excellence by drawing focus to the presence of gender bias in scientific knowledge making, and to hold space for conversations about advancing gender equality in scientific practices and institutions. The theme for this year's event was Diversity and Gender in Science: Enhancing the Value of Research and Innovation. The event was covered by and reported in The Straits Times of Singapore:

<https://www.straitstimes.com/singapore/summit-in-singapore-examined-gender-inequality-issues-in-science-and-research>

- **IRC Conference on Science Engineering and Technology (IRC-SET) 2019 (25 November 2019)**

The IRC organized the IRC-SET 2019, in which WiE members played an active role in the organizing committee including conference chair, technical program chair and publication chair. This conference provide a platform for young minds to present their STEM research and were encouraged with awards such as best paper and best presenter.

- **Asia Pacific Microwave Conference WiE-YP special session (13 December 2019)**

WiE and YP coorganized a special session in the APMC conference which brought senior professional in the microwave technology field to provide a snapshot of their career journey and considerations for various career paths for young professionals. The event ends with a networking session.

### **Social Events**

- **IEEE Day 2019 - IEEE SG Family Day (11 October 2019)**

To celebrate the 10<sup>th</sup> anniversary of IEEE Day, we organized the IEEE SG Family Day 2019 on 12 October 2019 (Saturday). The event was jointly organized by IEEE Women in Engineering Singapore, IEEE Young Professionals Singapore and IEEE Singapore Section with support from various chapters. There was a Bowling Competition in 2 categories: Open Category: 13 years and above, Kids Category: 4 - 12 years old. The event was a huge success with almost 100 attendees and well appreciated.

- **NTUC Lifestyle Wellness day event (18 October 2019)**

NTUC U-Associate & ICAEW conducted a wellness day with the theme "Boosting your resilience with a healthy lifestyle in today's fast pace environment" on the 18 October at the 80RR Fintech Hub. The WiE SG Chairperson was invited to attend. The event featured talks by psychotherapist, counsellors, nutritionist and wellness experts on topics such as mental and physical health, nutrition and ergonomics.

- **NTUC UAssociate Events**

NTUC UA constantly engaged with WiE to engage women in tech and support the community with various events. NTUC UA invited WiE members for several events including NTUC Let's March - Leaders Assembly (Women's day event supported by IEEE WiE), Engineer's networking night by Workforce Singapore (29 July 2019) and SG:D Industry day and SG women in Tech Breakfast Dialog (17 October 2019).

### **(B) FUTURE PLANS:**

WiE SG will continue to work with their various community collaborators including SGInnovate, Entrepreneur First, NTUC UWEEI and NTUC UA and explore connections with new



organizations such as Biotech connection Singapore, Lean In Singapore, etc. The team plans to organize a tech leadership conference, continue WiE networking Nights and work on a community establishment for mentorship and career events.

**(C) SUMMARY:**

We had organized 4 administrative meetings which drive the whole year for exciting activities and 7 technical seminars/Inspirational talks for promoting our WIE and IEEE section activities and continued the cooperation with IEEE Singapore section, IRC and NTUC U Associates Network. We will work closely with our new women networks and connection with professional bodies to promote women profiles in Singapore.

WiE established partnership with several tech-related organizations and communities and worked to launch new events. NTUC U-Associate, NTUC UWEEI, SGInnovate, Entrepreneur First. In total, we have **14 activities** in terms of social, technical, networking and promoting event for the year 2018. We appreciate the strong support from IEEE Singapore Section, IEEE R10 WIE. We believe WIE SG can contribute more interesting and meaningful events and activities both in social and technical and serves as a communication bridge for women engineers and scientists with the world leading IEEE science and technology community.

## **PART C - OTHERS**

### **C.1 Special Events**

### **C.2 Relationship with National and International Societies and Non-Government Organizations (NGO)**

- The Institution of Engineers, Singapore (IES) and the Institute of Electrical and Electronics Engineers, Inc. (IEEE) intend to continue with the IES/IEEE Joint Medal of Excellence Award. The aim of the award is to promote engineering as a profession and to recognize an individual for his/her contributions in Engineering that have had far-reaching impacts on society. The award is expected to inspire the young to take up engineering as a profession. This award is highly prestigious and the recipient will be recognized not only in Singapore but also the region and around the world. The 2019 Joint Medal of Excellence was awarded to Mr Lee Chuan Seng, Emeritus Chairman of Beca Asia.
- IEEE Singapore Section works with the national trade union congress (NTUC) as one of the members of U Associates. U Associate is a partnership program designed to engage and support professional associations. As members of U Associate, IEEE volunteers get chance to engage with professionals from related industry and prepare for future challenges to the economy. NTUC helps us in publicizing IEEE activities among other NTUC members and thus helps in our outreach to industry.

## **PART D - GOALS AND PLANS**

### **D.2 Goals and Future Plans**

#### Membership Development

To attract new members as well as make existing ones retain their membership.

- Tie up with hotels and popular attractions for special discounts
- Hold regular networking events with topics that are of interest members
- Organize movies events for networking
- To add other attractions as membership benefits
- Offer seminars / trainings / short courses with NTUC
- List of activities to be included in website like a calendar of events
- To promote membership drives in the month of March and August with membership concessions

#### Engaging Students

- To increase support for HKN activities. To encourage the HKN chapters to lead outreach activities in schools.
- To continue to support activities like Graduate Student Symposium (GSS) organized by YP at NUS and towards membership development.

#### Engaging Industry

- The section ExCo has formed a sub-committee to brainstorm about ways to promote IEEE membership among industry professionals in Singapore.
- The section will engage with NTUC to publicize useful technical and professional courses and seminars for the industry professionals in Singapore.